STATE OF CALIFORNIA—THE RESOURCES AGENCY

PETE WILSON, Governor

DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS,
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February 28, 1994

WATER DISPOSAL PROJECT
Elk Hills Field
Tulare Zone
PC: 2280000 6
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Mr. T. L. Ditmore
Bechtel Petroleum Operations, Inc.
P. O. Box 127
Tupman, CA 93276

Dear Mr. Ditmore:

Thank you for our meeting of February 14, 1994 to present your interpretation of the causes of the recent surface breakthroughs of fluid being injected into Tulare zone water disposal wells in Elk Hills Field and your plans and commitment to prevent further such occurrences. Based upon the evidence submitted, this Division concurs that these breakthroughs are the result of formation fracturing along SW-NE trending planes of weakness in the overlying Tulare, possibly in conjunction with SE-NW trending fault zones and are injection-rate related. Once fractured, it is probable that the formation does not heal due to propant material being carried up and deposited within the rupture from the deeper intervals. Although it was offered that fracturing during step-rate testing was the primary cause of these structures, this Division points out that virtually all of your Tulare zone injectors exceeded the maximum allowable surface pressure set by this Division for extended periods in the past (please refer to this Division's letter of March 1, 1993). As such, it is possible that these events contributed to the creation of these fractures. Concerning the correlation of surface breakthrough with injection rate, this Division concurs with the findings of your staff.

Based upon these findings, this Division feels that your staff has reached a sound conclusion regarding these incidents and has formulated a reasonable action plan to prevent any future such occurrences. For that reason, this Division is taking no action at this time to impose any additional requirements for wells in this project. We do, however, request periodic updates regarding any studies being conducted. Should any further surface breakthroughs occur, this Division must be notified immediately, at which time Division intervention may be necessary.

If you have any questions, please contact this office.

Yours truly,

David Mitchell

David Mitchell
Senior Oil and Gas Engineer
DM/njk